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ABSTRACT

How managers develop following their individual assessment is explored, examining links between steps in the development process, and testing several hypotheses about the relationships between environmental characteristics and individual development. A framework proposed by L. W. Hellervik, J. F. Hazucha, and R. J. Schneider (1992) suggests that there are five steps in the change process. These steps were used to formulate some hypotheses about individual change, the role of feedback, and the development of skills. Participants were managers assessed between 1989 and 1992 by an international consulting firm specializing in assessment-based selection and development. In 1994, managers who had been assessed and were still employed by the firm participated in a follow-up to which 421 manager and boss pairs responded. Results were consistent with the development process outlined by Hellervik et al., with particular support for the importance of accurately identifying needs, committing to development objectives, and working on behavior change through development activities. Findings also support the importance of feedback during development, the importance of development planning, and the idea that the number of development activities in which managers participate is positively related to skill development. (Contains 4 tables, 5 figures, and 12 references.) (SLD)

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Now that I've Been Assessed, What Do I Do?
Facilitating Development after Individual Assessments

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Now that I've Been Assessed, What Do I Do?

Facilitating Development after Individual Assessments

The success of initiatives such as re-engineering, downsizing, continuous quality improvement, and implementing self-managed work teams rests on the ability of organizational leaders to manage the change process. Yet, the new organizational structures, work processes, and job responsibilities created by such initiatives often require a mix of knowledge, skills, and abilities that managers may not possess. Many managers must update their skills to ensure continued individual and organizational success. How can this challenge be met?

Management development traditionally has been linked with personnel assessment. In a 1987 survey (Ryan & Sackett), over 66% of the industrial-organizational psychologists who responded reported that development was a typical purpose of individual assessments, and over 75% typically included development suggestions in their feedback to clients. However, little is known about how the assessment *event* drives the *process* of development. To meet the demands posed by the changing structure of work, human resource professionals need to re-conceptualize personnel assessment as an ongoing intervention that includes the facilitation of development following assessment.

The objective of this study is to explore how managers develop following individual assessment. Since research in this area is in its infancy, much of this paper is devoted to providing descriptive information. Links between steps in the development process are examined. In addition, several hypotheses about the relationships between environmental characteristics and individual development are tested.

Reflecting on experiences with training programs highlights the peril of viewing development as an event. How many people have spent several days at a training program which they thought was fantastic, only to be overwhelmed by their responsibilities when they return to their jobs? As the days pass, the energy and enthusiasm generated by the course wane. Intentions to use new skills are eroded by the hectic pace of work.

Research on training also illuminates the limitations of conceptualizing development as an event. The bulk of empirical research has been devoted to the question of whether a particular training program yields beneficial outcomes. Testing whether a particular training method "works" appears to have been a research priority. This approach cannot answer a question of more interest to the practitioner. What is the *best* way of making managers more effective at critical tasks (e.g. leading teams, managing change, working cross-functionally)? (Campbell, 1988).

Research recently has begun to focus on the process of development. The difficulty in transferring training to the work environment has been acknowledged, and directions for research have been recommended (Baldwin & Ford, 1988). The exploration of the effects of individual (Gist, Stevens, & Bavetta, 1991) and environmental (Wasserman & Katzman, 1995) characteristics on transfer of training has begun. Several studies have examined the process of development following participation in a 360-degree feedback program (Hazucha, Hezlett, and Schneider, 1993; Holt, Noe, and Cavanaugh, 1995).

As attention has turned toward studying the process of development, the value of literatures outside mainstream research in training and development has been recognized. Research from several disciplines has generated a body of knowledge about the process of behavior change and development. Baldwin and Ford (1988) suggested research in the areas of

counseling, psychotherapy, and educational psychology could stimulate research and applications in the workplace. Bridging the gap between the current literatures in instructional psychology and training and development was recommended by Campbell (1988). Hellervik, Hazucha, & Schneider (1992) have described a behavior change framework based upon an integration of research in the areas of training and development, psychotherapy, personality, self-regulation and social cognition.

According to this framework, there are five steps in the change process. Threats to change or skill development are suggested by each step. The first step in the change process is an assessment or needs analysis. Individuals must have an understanding of their training needs. An inaccurate assessment or the rejection of the assessment by the assessee may derail the development process.

The second step in the integrated behavior change framework is the assignment of behavioral objectives. In this step, the basic understanding of training needs is converted to specific behavioral objectives. Goals that are vague or too difficult will make development more challenging.

Intention formulation and protection is the third step in the integrated behavioral change framework. In order to change, individuals must be committed to changing and must continue to strive to develop in the face of obstacles. If individuals don't have the opportunity, time or means to change, they are unlikely to be committed to changing. Development also will be hampered if individuals have low self-efficacy.

The fourth step in the development process is changing behavior in the context of the change environment. For example, a manager might practice listening skills with another participant in a training course. A number of environmental and individual characteristics can

threaten change at this stage. In the environmental realm, some of these include inappropriate training methods and media, failure to reinforce trainee behaviors, and ambiguous feedback. Individual factors that may threaten development include insufficient prerequisite knowledge and lack of attention.

The generalization of new behaviors to the work environment is the final step in the development process. This step may be impeded by factors similar to the ones that disrupt development in the change environment.

The five steps in the integrated behavioral change framework do not necessarily occur in a linear sequence. Later steps may feed back into earlier stages in the change process. For example, a supervisor's praise for using a new skill on the job would contribute to the generalization and maintenance of behaviors in the work environment. If the praise bolstered the individual's self-efficacy, the intention to change behavior (the third step in the change process) might also be affected.

How does this framework derived from multiple theoretical and research paradigms apply to the specific situation of development following individual assessment? The assessment itself represents the first step in the change process. Individual strengths and weaknesses are identified, and, as was mentioned previously, recommendations for development are often provided (Ryan & Sackett, 1987).

Based on the integrated change model, the next steps in development following assessment would be setting behavior standards and forming intentions to strive to reach these standards. If accepted by assessees, the development suggestions may serve as development objectives. Other development goals may be formulated either by the organization or the

individual in response to the assessment results. This suggests that assessment feedback is a critical step in initiating the process of development following assessment.

Hypothesis 1: Individuals who receive feedback on their assessment will be more likely to establish objectives and formulate intentions, or plans, to develop.

In order to attain their behavioral objectives and implement their development intentions, managers will move to the next step in the behavior change process: behavioral expression in the change environment. In other words, managers will participate in activities designed to help them learn new skills and proficiencies. A range of change environments are available. Some managers may listen to audio tapes as they drive to work; others may participate in training programs. Using the workplace itself as the change environment may be a particularly effective strategy. Job transitions, task-related characteristics, and job obstacles have been linked to self-reports of on-the-job learning (McCauley, Ruderman, Ohlott, and Morrow, 1994). Managers who have established behavioral objectives and are committed to developing are expected to participate in more development activities. Previous research has not found support for this hypothesis (Holt, et al., 1995), but further research in this area appears merited before this theory is discarded.

Hypothesis 2: Managers who have taken steps to establish behavioral objectives and plan for development will participate in more development activities.

Another factor expected to influence participation in development activities is support for development. The integrative behavioral change framework suggests that reward and reinforcement can facilitate skill development in the behavior change environment. Several studies have supported this hypothesis. Noe & Wilk (1993) found that manager and peers' support for the use of skills and attendance at development activities was positively related to

self-report measures of participation in development activities. Hazucha, et al. (1993) also found a significant, positive correlation between ratings of boss support and self-reports of the number of development activities completed.

Research on the relationship between organizational support for development and participation in development activities has yielded mixed results. While Hazucha et al.(1993) found no relationship between organizational support and development activities, Holt et al. (1995) found a significant positive correlations between these two variables. However, in a hierarchical regression, organizational support did not significantly improve the amount of variance in self-development activities accounted for.

Hypothesis 3: Boss and organizational support for development will be positively related to participation in development activities.

Boss and organizational support for development also are expected to influence the generalization of skills to the change environment. Encouragement from supervisors and an organizational climate that allows managers to "try out" new skills should facilitate skill improvement in the work environment. Hazucha et al. (1993) found that average supervisor support was positively correlated with self ratings of change. Organizational support was linked to both boss and self perceptions of change.

Hypothesis 4: Boss and organizational support for development will be positively related to skill development.

Skill development also is expected to be related to development activities. Hazucha et al. (1993) found significant positive correlations between the number of development activities completed and three measures of skill improvement.

Hypothesis 5: The number of development activities completed will be positively related to skill development.

Theories of self-regulation (e.g. Carver & Scheier, 1981) suggest that monitoring activities should be linked to the number of development activities completed and skill development. By tracking development progress, managers can detect discrepancies between behavioral objectives and skill improvement. Gaps may be addressed by engaging in more development activities or in devoting more attention to generalizing behaviors to the work environment. Hazucha et al. (1993) found that reviewing progress was positively correlated with three measures of skill improvement.

Hypothesis 6: Tracking development progress will be positively related to participation in development activities and skill improvement.

The final hypothesis involves a return to the scene of the crime: the assessment. Within the integrated behavior change framework, steps early in the change process clearly can influence steps later in the process. Individuals who are accurately assessed will be more likely to establish behavioral objectives. Those who set goals are more likely to be committed to development, and so forth. The expected relationship between receipt of assessment feedback and planning for development was outlined in the first hypothesis. To a lesser extent, receiving feedback also is expected to affect later steps in the development process.

Hypothesis 7: Individuals who receive feedback will be more likely to participate in development activities and improve their skills than those who don't. The magnitude of these differences will diminish as one moves through the steps in the integrated behavior change framework.

Method

Procedure

The participants in this study were managers assessed between 1989 and 1992 by an international consulting firm specializing in assessment-based selection and development. At the time of assessment, the managers were employed by or candidates for positions at a large, national food distributor and wholesaler with headquarters in the midwestern United States. Some of the managers employed by the organization were assessed for development purposes. Others were assessed because they were candidates for other positions within the organization.

Managers were assessed using one of two procedures. Basic assessments included mental ability tests, personality inventories, and a structured interview. Managers who participated in in-depth assessments also completed an in-basket exercise and a one-on-one role play.

After being assessed, managers hired by the food distributor or already employed by it had the opportunity to receive feedback on their assessment results. Feedback reports were sent to a HR representative in the manager's division. The reports included two or three development priorities, development suggestions for the managers, and recommendations for how the manager's boss could help the manager develop. The HR person distributed copies of the report to the boss and manager, and encouraged the boss to initiate development planning with the manager. Development planning was required of managers in some positions as part of the succession planning process. Managers also could arrange to receive feedback via telephone from the consulting firm

In 1994, 581 managers who had been assessed and were still employed by the organization were asked to participate in a follow-up study. First, the current division of each manager was identified. Then the name of the boss of each manager was provided by the

organization. Finally, questionnaires were distributed to managers and their bosses. Several follow-up letters were sent to prompt participants to complete and return surveys. Completed questionnaires were returned directly to the consulting firm.

Participants

Questionnaires were received from 421 manager-boss pairs, for a response rate of 72.5%. The response rate for each division was at least 70%.

Managers. Over 75% of the managers were male (n =326). Of those who reported their ethnic background (n=418), over 90% indicated they were Caucasian American (n=378). Approximately 5% were African American (n=22), 2% were Native American (n=9), and less than 2% were Hispanic American (n=6). Two managers reported their ethnic group as "Other", and one manager was Asian American.

The managers represented all management levels. Of the 317 managers who reported their level, about 30% were supervisors (n =97), just over a quarter were first-line managers (n =83), 28% (n =89) were middle managers and almost 15% were executives (n =47).

The managers were educated and experienced. Over 40% of the 418 managers who provided information about their highest level of education had Bachelors degrees (n =169). Over 13% had earned either Master's (n =47) or Doctorates (n =5). On average, managers had almost twenty years of experience in the workforce (M = 19.7, SD = 7.9) and had over twelve years of management experience (M=12.2, SD=8.1, n =409). The average of the managers was 39.8 (SD = 7.3, n =415).

Bosses. The bosses in the study also were predominantly white males. Of the 419 bosses who reported their gender 397 were men and 22 were women. Over 95% of the bosses who indicated their ethnic background (n =410) were Caucasian (n =391). Approximately, 3% were

African American (n =13) and 1% were Hispanic (n =34). One boss was Native American and another was Asian.

Bosses tended to come from the higher management levels. Of the 393 managers who reported their management level about 40% were middle managers (n =158) and just over 37% were executives (n =148).

The bosses also were well-educated and highly experienced. Of the 414 managers who provided information about the highest level of education they had achieved, over half had earned at least a Bachelor's degree. On average, the bosses had nearly twenty-five years of experience in the workforce (M = 24.9, SD=8.1, n = 413) and almost eighteen years in management (M = 17.7, SD=8.3, n =411). The average age of the bosses was 44.8 (SD=7.2, n =390).

Measures

All of the measures reported in this paper were collected with the questionnaires sent to managers and their bosses in 1994. Many of the items in the two versions of the questionnaire had parallel content. Wording was changed to reflect the different perspective. The manager or self questionnaire was ten pages long. The boss version of the questionnaire was eight pages long. The questionnaires included both close- and open-ended questions. The response scales for the close-ended questions included Likert-type scales, multiple choice questions, yes/no items, and "Check all that apply" response options.

Feedback. Information about the receipt of feedback was measured with three questions. Managers were asked: "Did you receive feedback on your most recent assessment results?" They could respond "Yes" or "No." Managers were then asked: "If yes, in what form was that feedback presented?" The response options included "In person," "By phone," and "I don't

remember." Finally, managers were asked whether they had read a report of their most recent assessment results. Managers could respond "Yes," "No," or "I don't remember."

Development planning. Managers were given a list of actions they may have taken to plan for their development after receiving their feedback results and instructed to check all that applied. The list included five specific actions and an "Other" category. The number of development actions taken was summed to create an aggregate measure of planning or preparing for development.

Development activity. Managers were presented with a list of activities and asked to check all that they had participated in to develop their skills since their most recent assessment. In addition, managers were asked to rate on a four point scale the extent to which they believed the activity had helped them to develop. Each point on the rating scale had a verbal anchor, with one being "Not helpful; made no improvement" and four being "Very helpful; made major improvement." The list included thirteen activities and an "Other" category. The number of development activities completed was summed to create a measure of overall development activities.

Tracking development. Information was collected on what managers had done to monitor their development since their most recent assessment. Managers were asked whether they had reviewed their development plans or discussed their developmental progress with their managers. If they had, managers were asked to indicate how often. The response options included monthly, quarterly, semi-annually, and annually.

Boss Support. Sixteen behavioral statements were used to evaluate the extent to which bosses had supported managers' development efforts. Both managers and their bosses indicated on a five-point Likert-type scale the extent to which bosses performed each behavior. Each point

on the scale had a verbal anchor with one being "Not at All" and five being "To a Very Great Extent." A "Does Not Apply" response option also was available.

Item wording was adjusted to be appropriate for the appropriate respondent. Managers were asked "To what extent do the following statements describe your manager." The series of behavior statements was prefaced with the stem "My manager." A prototypical item was "Provides me with helpful and timely feedback."

Bosses were asked "To what extent do the following statement describe you?" The boss version of the prototypical item was "I provide this person with helpful and timely feedback."

The analyses using the boss support items were conducted on a sub-sample of data. In some cases, the name of the boss supplied by the manager disagreed with the name provided by the boss. Job changes that occurred after the organization provided the names of bosses and during data collection may account for the discrepancy. In order to ensure that manager and boss ratings of boss support referred to the same target, cases where the boss's name differed on the manager and boss questionnaire were excluded. The resulting sub-sample size was 376.

Organizational Support. Organizational support was measured with nineteen behavioral statements. Managers and bosses rated the extent to which the statements described their organization on a five-point Likert-type scale. This response scale was identical to the one used with the boss support items. Some of the behavioral statements were worded in a negative direction. Responses to these items were re-coded so the direction of all ratings was the same. Analysis of the organizational support data utilized the sub-sample of managers and bosses who gave the same boss name.

Development outcomes. Managers and their bosses completed three items measuring the effectiveness of managers' development efforts. One item assessed the degree of effort managers

invested in their development since they were last assessed. The five response options were: "Invested concentrated effort on a daily basis," "Invested concentrated effort on a weekly or monthly basis," "Invested some effort on a weekly or monthly basis," "Invested some effort a few times during the year," and "Invested little or no effort."

A second item asked participants to rate how much the managers' skills had improved since they were last assessed. Five response choices were available: "Made major improvement," "Made significant improvement," "Made some improvement," "Made no improvement," and "Skills have deteriorated."

Managers and their bosses also evaluated the extent to which the managers had met their development goals in the last year. The midpoint of the five point ratings scale was "Met goals". The other anchors were "Failed to meet goals," "Fell slightly short of goals," "Exceeded goals," and "Greatly exceeded goals."

Results

The results of this study are presented in two sections. First, descriptive information about the process of development is summarized. Second, the results of the tests of the hypotheses are presented.

Descriptive

Feedback. Most managers received feedback about their assessment. Out of 419 managers, 88.7% received feedback. Thus, most manages had a formal opportunity to gain insight into their strengths and development needs following their assessment.

The means by which feedback was presented varied. Of the 359 managers who received feedback, 42.3% had feedback presented to them in person. A majority of managers (56.5%)

received their feedback by phone. A few managers (1.1%) could not remember how they received their feedback.

Over half of the managers read a report summarizing their assessment results. Out of 417 managers, 55.6% read a feedback report, 39.8% did not, and 4.6% don't remember.

Development planning. Figure 1 summarizes the actions managers took to prepare for their development after they received their assessment results. The step completed most frequently was targeting specific skill areas for development. Only a quarter of the managers wrote a development plan.

Development action. Figure 2 shows the development activities completed by managers, and Figure 3 displays the extent to which managers believed these activities helped them to develop. On average, managers completed 7.0 (SD=3.02, n =421) development activities. The average helpfulness of the activities was fairly high. The mean of 2.86 (SD=.47, n =408) indicates that on average, activities were between "Somewhat helpful, made some slight improvement" and "Helpful, made significant improvement."

The activities most frequently completed were not necessarily those which had the most impact. The activity completed by the most managers (Reading books/articles or listening to/watching tapes) was rated lowest in terms of how helpful it was. Job rotation/cross training, practice using skills on-the-job, special assignments, and completing training courses that allowed skill practice were the activities rated highest in terms of facilitating development.

Tracking Development Progress. Figures 4 and 5 show how often managers completed activities related to monitoring the progress of their development. Over forty percent of the managers did not review their development plan. Less then ten percent of the managers reviewed their plan monthly. Approximately a third of the managers did not discuss their developmental

progress with their boss. Of those who did discuss their progress with their boss, most did so annually.

Boss Support for Development. The means of the manager ratings of the sixteen items measuring boss support for development ranged between 2.10 (SD=1.01, N =184) and 3.58 (SD = 1.07, N=367). Mean boss ratings of support on the sixteen items ranged from 2.46 (SD=1.10, N =127) to 3.79 (SD=.71, N=366). Overall boss ratings of support appear higher and had less variance than the manager ratings.

A high proportion of participants indicated that one item was "Not applicable." This item dealt with the boss coordinating with the manager's mentor. In order to ensure the generalizability of results beyond managers with mentors, this item was dropped from the factor analyses described in this section.

Exploratory factor analysis were used to examine the structure of support for development. Boss and manager ratings were analyzed separately. Maximum likelihood factor analysis was used to extract the factors, and oblique rotations were performed with the direct oblimin procedure. Beginning with a one factor solution, models were fit until a non-significant chi-square indicated that the null hypothesis of the model fitting the observed data could not be rejected. For both the manager and boss ratings of boss support, the factor analytic results were difficult to interpret.

The factor analysis of the manager ratings yielded two eigenvalues greater than one, suggesting a two factor solution was appropriate. However, the chi-square for the two factor solution was significant, indicating that two common factors did not adequately reproduce the observed data. The five factor model did fit the data, but during the iteration process communalities greater than one were encountered. The occurrence of a Heywood case demands

that the resulting improper solution be interpreted at the researcher's own risk. Therefore, a general summary of the results will be presented rather than the final rotated solution.

An examination of the pattern matrix revealed that one factor had no loadings larger than .20. A second factor had only one item with a loading greater than .30. This item dealt with the boss challenging the manager and creating excitement and drive towards goals. The other three factors each had at least three items that loaded highest on the factor. Each of these loading was greater .30. These factors appeared to be different facets of the boss's role: coaching, acting as an advocate, and formally planning for the manager's development.

The factor analysis of the boss ratings produced similarly chaotic results. Three eigenvalues were greater than one, and two were between .95 and 1.0. The chi-square tests associate with the maximum likelihood factor analysis did indicate that a five factor solution was appropriate. But, as with the manager ratings of boss support, this solution was a Heywood case.

All of the factors had at least one loading greater than .30 that was also the highest loading for the item on a factor. The five factors appear best described as: recommending or initiating development activities, coaching, acting as an advocate, serving as a role model, and formally planning for the manager's development.

The factor analysis of the manager and boss ratings of support both resulted in a five factor solution. Some of the factors, such as coaching, appeared from the analysis of both sets of ratings. The pattern of loadings suggested that there are also some differences between the structure of manager and boss perceptions of support.

In order to test two of the hypotheses, the ratings of boss support needed to be collapsed in some manner. Since the factor analyses did not yield proper solutions, another approach had to be used. Although the results of the factor analyses suggest that boss support for development

is multidimensional, the appropriateness of using all sixteen items in a single scale was explored. Separate analyses of the manager and boss ratings indicated that the internal reliability of such scales were satisfactory. The boss support scale based on manager ratings had a Cronbach's alpha of .96. The scale based on boss ratings had a Cronbach's alpha of .89.

Boss support scale scores were computed for participants who did not have an excessive amount of missing data. Manager ratings of boss support were not computed if a manager had not rated two or more items or had indicated two or more items were "Not applicable." The same rule of thumb was used in computing boss ratings of support.

The average manager rating of boss support was 3.06 (SD= .88, N=339), and the average boss rating of boss support was 3.52 (SD=.48, N=354). The correlation between the two scales was positive and significant (r =.23 (p < .001, n=321). However, the magnitude of the correlation suggests that there are gaps between what managers perceive their bosses did to support development and what bosses report doing to support managers' development.

Organizational Support for Development. The mean manager ratings on the nineteen items assessing organizational support for development ranged from 2.22 (SD = 1.04, n = 356) to 4.81 (SD = .52, N =367). Boss ratings ranged from 2.43 (SD=1.07, n=348) to 4.84 (SD=.47, n=343). Although the ratings given by bosses were somewhat higher, the rank order of the items was quite similar.

The procedure used to factor analyze the items assessing organizational support was the same as the one for the measures of boss support. The outcome was also virtually impossible to interpret. The factor analysis of the manger ratings of organizational support yielded for eigenvalues greater than one, suggesting a four factor solution might be appropriate. The chi-square test associated with the four factor model was significant, indicating that it did not

adequately reproduce the observed data. The chi square statistic for the six factor solution was not significant. Thus, the null hypothesis that the six factor solution fit the data could not be rejected. However, this solution was a Heywood case. Again, the resulting improper solution must be interpreted with caution.

One factor had only one variable that loaded highest on the factor with a loading greater than .30. This item dealt with receiving timely information about development opportunities. Two factors each had two loadings greater than .30. These factors appeared to be rewards for development and formal systems for establishing and holding managers accountable for development goals. The three other factors were formal training development programs and processes, the belief that people can develop their skills, and the value of developing managers within the organization.

The results of the factor analysis of the boss ratings of organizational support, were, at best, just as uninterpretable. Five eigenvalues were greater than one, a sixth was greater than .95. The six factor solution was a Heywood case, and the chi-square statistic indicated that this model did not fit the data. In fact, none of the solutions extracted adequately reproduced the observed data. The chi-square statistic was significant for all solutions up to and including eight factors. Extraction of a solution with more than eight factors was not attempted due to the unsatisfactory variable to factor ratio.

The six factors yielded by the analysis of the boss ratings of organizational support appeared to be: (1) rewards for training, (2) formal goal setting included development, (3) the availability of resources to assist in development, (4) routine skill assessment, (5) belief in individual's capacity to develop their skills, and (6) internal processes that are consistent with valuing in development. These factors appear to be similar to those derived from the factor

analysis of the manager ratings. Both managers' and bosses' perceptions of the developmental support provided by organizations appear to be multidimensional.

Unfortunately, the factor analyses did not produce a solution sufficiently stable solution to use as a guide for combining the organizational support item. The reliability of scale based on manager ratings and boss ratings were evaluated with Cronbach's alphas. The results (α = .89 and α= .88, respectively) were satisfactory. Scale scores were computed for participants who were not missing too many rating of organizational support. Manager ratings of organizational support were not calculated if more than one item was missing or rated "Not applicable." A similar exclusion criteria was utilized with the boss ratings.

The mean manager rating of organizational support was 3.25 (SD=.55, n=335), and the mean boss rating of organizational support was 3.43 (SD=.51, n=331). The correlation between these two scales was .21 ($p<.001$, n=297). Manager and boss perceptions of organizational support for development are positively related, but by no means identical.

How closely related are boss and organizational support for development? Within a rating perspective, perceptions of boss and organizational support were positively and significantly related. Manager ratings of boss and organizational support were correlated .49 ($p<.001$, n=310), and boss ratings of boss and organization support were correlated .30 ($p<.001$, n=321). Manager ratings of organization support also were significantly correlated with boss ratings of boss support ($r=.16$, $p<.001$, n=318), but manager ratings of boss support were not related to boss ratings of organizational support ($r=.16$, $p<.001$, n=318).

Effectiveness of Development Efforts. Table 1 shows the means and standard deviations for manager and boss ratings of effort, improvement, and the degree to which managers met their

development goals. The table also displays the results of paired t-tests and correlations assessing the difference between the perceptions of managers and their bosses.

Table 1.

Manager and Boss Ratings of Development Outcomes

		Manager		Boss		
Variable	df	M	SD	M	SD	t-value
Effort	360	2.53	1.04	2.84	1.05	4.37***
Improvement	351	2.37	.63	2.71	.61	7.78***
Met goals	353	2.94	.82	2.92	.82	-.53

*** $p < .001$

Boss ratings of effort and skill improvement were significantly higher than ratings made by managers. Due to the direction in which response options were coded, this means managers saw themselves as putting in more effort and improving their skills more than bosses did.

There were no significant differences between perspectives in terms of meeting development goals. On average, both managers and their bosses thought managers had attained their development goals in the previous year.

Relationships among Development Steps

Table 2 shows comparisons between the managers who did and did not receive feedback. The results support both Hypotheses 1 and 7. Managers who received feedback completed more

Table 2.

Mean Differences between Managers who Received Feedback and Those who Did Not

		Received Feedback		No Feedback		
Variable	df	M	SD	M	SD	t
Development Planning	100.01	2.67	1.41	.55	1.03	13.92***
Development Activities	417	7.18	2.93	5.92	3.34	3.03***
Development Outcomes						
Effort						
Manager Ratings	414	2.53	1.03	2.81	1.22	-1.91*
Boss Ratings	359	2.79	1.04	3.06	1.10	-1.66*
Improvement						
Manager Ratings	68.27	2.36	.61	2.39	.75	-.29
Boss Ratings	63.75	2.69	.62	2.80	.54	-1.31
Met Goals						
Manager Ratings	351	2.93	.82	3.04	.91	-.90
Boss Ratings	357	2.92	.77	2.97	.83	-.47

*$p < .05$, *** $p < .001$

actions to plan and prepare for their development. Feedback recipients also participated in more development activities than those who did not receive feedback. As predicted, the size of the latter effect was smaller than the former. The differences in overall ratings of effort invested in development were even smaller. If the number of significance tests are corrected for using the Bonferroni method, this difference is not significant. No significant differences between the two groups were observed in skill improvement or in meeting goals.

Hypothesis 2 also was supported. The number of steps managers took to plan for their development was significantly correlated with the number of development activities they completed ($r = .43$, $p < .001$, $N=421$)

The number of development activities managers completed also was related to both boss and organizational support for development. The correlations between development activities and manager ratings of boss and organizational support were .23 ($p < .001$, $N = 339$) and .21 ($p < .001$, $N = 336$), respectively. Boss ratings of boss and organizational support for development were less strongly related to the number of development activities completed by managers. Development activities correlated .17 ($p < .001$, $N = 354$) with boss ratings of boss support and .10 ($p < .05$, $N = 331$) with boss ratings of organizational support. If the Bonferroni correction is used to correct for the number of correlations calculated between development activities and measures of support, the latter correlation is not significant. In general, these results support Hypothesis 3.

Hypothesis 4 was that higher levels of support should be associated with more positive development outcomes. As the correlations in Table 3 show, this hypothesis was supported. Managers who rated boss support higher were more likely to invest effort in development, improve their skills, and meet their development goals. Ratings of organizational support were

Table 3.

Correlations among Measures of Support and Skill Development

	Boss Support				Organizational Support			
	Manager Ratings		Boss Ratings		Manager Ratings		Boss Ratings	
	r	n	r	n	r	n	r	n
Effort								
Manager Ratings	-.28***	338	-.22***	351	-.25***	334	-.07	328
Boss Ratings	-.23***	299	-.31***	318	-.15**	293	-.20***	293
Improvement								
Manager Ratings	-.26***	337	-.17***	350	-.22***	334	.00	328
Boss Ratings	-.25***	292	-.35***	307	-.19***	284	-.16**	283
Met Goals								
Manager Ratings	.17***	334	.09	345	.12*	293	.08	324
Boss Ratings	.16**	300	.31***	313	.04	233	.04	288

Note. Boss and organizational support are scored such that higher values indicate a greater degree of support. Effort and investment are coded such that higher values indicate less of each outcome. In contrast, meeting goals is scored so that higher values indicate meeting and exceeding goals.

*p < .05, **p < .01*** p < .001

less strongly linked to the measures of skill development. Manager ratings of effort and improvement are unrelated to boss ratings of support.

Managers who completed more development activities were more likely to show skill improvement. The number of development activities completed was significantly correlated to both manager and boss ratings of effort invested in development (r =-.35, p < .001, n= 418 and r = -.19, p < .001, n=363, respectively). Since effort is scored in the opposite direction from development activities, these values indicate that as managers participation development activities increases, perceptions of the amount of effort they invest in development increase. Similar relationships were found between number of development activities completed and manager and boss ratings of skill improvement (r =-.35, p < .001, n = 416 and r = -.15, p < .01, n=354, respectively). Participation in development activities was not significantly related to boss ratings of meeting development goals (r =.07, p =.090, n = 361), but was significantly and positively related to manager ratings of meeting development goals (r =.22, p <.001, n = 410), Thus, Hypothesis 5 was largely supported.

The relationship between tracking development progress and other variables was examined using Spearman rank order correlations. Use of a method suitable for ordinal data was necessary because of the unequal intervals employed in the repines scales for the measures of tracking progress.

The number of development activities completed were significantly related to both measures of monitoring development progress. Managers who reviewed their development plan infrequently were less likely to complete development activities (r = -.34, p <.001, n = 421), Similarly, managers who rarely discussed their development progress with their boss were less likely to participate in development activities (r = -.35, p <.001, n = 421).

Table 4.

Correlations between Tracking Development Progress and Skill Improvement

	Reviewed. Plan		Discussed Progress with Boss	
	r_s	df	r_s	df
Effort				
Manager Ratings	.36***	418	.32***	418
Boss Ratings	.12**	363	.18***	363
Improvement				
Manager Ratings	.28***	416	.29***	416
Boss Ratings	.11*	354	.15**	354
Met Goals				
Manager Ratings	-.13**	410	-.13**	410
Boss Ratings	-.03	361	-.13**	361

Note. Reviewing development plans and discussing development progress with the boss are scored such that higher values indicate less frequent monitoring. Effort and investment are coded such that higher values indicate less of each outcome. In contrast, meeting goals is scored so that higher values indicate meeting and exceeding goals.

*$p < .05$, **$p < .01$*** $p < .001$

Table 4 shows the correlations between development tracking and measures of skill development. In general, managers who monitored their progress infrequently were less likely to develop their skills. Hypothesis 6, that tracking development progress would be positively related to participation in development activities and skill improvement, was supported.

Discussion

Summary

The results of this study are consistent with the development process outlined in the Hellervik, et al. (1992) behavior change framework. Specifically, this study supports the importance of several steps in the process of behavior change, or skill development. These include accurately identifying development needs, committing to development objectives, and working on behavior change through development activities. Previous research (Hazucha et al., 1993; Holt et al. 1995; Noe and Wilk, 1993) also has supported aspects of the Hellervik, et al. framework. This study has extended the investigation of the development process to the context of individual assessments.

The findings suggest that individuals who receive feedback following an individual assessment are more likely to prepare a plan to develop (Hypothesis 1) and participate in development activities (Hypothesis 7). Although receiving feedback was not directly related to skill improvement, its relationship to development planning and development activities is encouraging. Feedback from individual assessments appears to play a valuable role in launching managers' development.

This study also reinforces the importance of development planning after an individual assessment. The number of actions managers took in setting objectives and planning for their development was significantly and positively related to the number of development activities in

which they participated. This support for Hypothesis 2 suggests that those managers who put more effort into their objectives and plans are more likely to complete development activities.

In addition, this study supports the hypothesis that the number of development activities participated in by managers is positively related to skill development. These results suggest that those individuals who spend time participating in development activities are more likely to experience skill improvement. If these improved skills are related to key needs of the individuals' jobs, the benefits of encouraging individuals to engage in development activities may be substantial.

This study sheds some light on which types of development activities may be most helpful to individuals developing their skills. Specifically, on-the-job types of activities (i.e., on-the-job practice, special assignments, and job rotation/cross-training) were rated highest by managers in terms of the extent to which they were helpful in making skill improvements. Training courses that allowed skill practice were also among the highest rated development activities. These results, which are consistent with previous research (e.g. Hazucha et al., 1993; McCauley, et al., 1994), suggest that development activities that demand more than an understanding of concepts may make more of an impact on skill development. Since managers were less likely to complete activities that involved skill practice, bosses and organizations may be able to increase skill development by providing encouragement, resources, and rewards for participation in activities requiring skill practice and application.

Support offered by bosses and organizations appears to play a role in the development progress of individuals. Perceptions of boss and organization support for development were positively related to the number of development activities completed by managers as well as to skill improvement. These findings suggest that action on the part of the boss to support

development, such as assisting in development planning, recommending development activities, coaching, and acting as an advocate or role model, will likely have a positive impact on the extent to which individuals engage in development activities and improve their skills. In addition, an organization that supports development through its internal processes and reward systems will likely positively impact the development progress of its employees.

This study supports the hypothesis that tracking development progress is positively related to participation in development activities and skill improvement. Managers who reviewed their development plan infrequently on their own or with their bosses were less likely to participate in development activities and improve their skills. This suggests that managers who monitor their development are more likely to invest effort in their development and see improvement.

Implications

The results of this study have implications for individuals, bosses, and organizations. They suggest individuals should take advantage of opportunities to get feedback on an assessment of their skills. Individuals should use information and resources available to them to set development objectives and focus their attention on development priorities. In addition, it appears that individuals interested in improving their skills would benefit from participation in on-the-job development activities or those offering opportunities to practice new skills. To enhance the number of development activities they participate in, they may want to find ways to engage in some type of activity on a regular basis, rather than only sporadically. Individuals should also be encouraged to monitor their progress against goals and enlist the support of their managers in their development. Monitoring may give individuals a chance to reflect on their learning and more easily generalize it in their work environment. In general, individuals who

take responsibility for their development and spend time on it will be more likely to experience skill improvement.

Bosses should be encouraged to support the development of individuals through action related to the establishment of developmental plans and participation in development activities. This may involve serving as an advocate for individual's participation in particular developmental activities or assisting individuals in monitoring progress. Bosses should be receptive to individuals' requests for assistance with their development and may be able to launch individuals' development process by providing accurate and helpful feedback.

Organizations should continue to encourage people who do not have a clear and accurate sense of their development needs to participate in activities, such as assessment and feedback, that can clarify them and provide a foundation for setting development objectives. Organizations also should encourage development by ensuring that internal processes and rewards support development effort and progress. Organizations also should consider facilitating development indirectly by providing incentives to bosses who develop their subordinates.

Limitations

One limitation of this study was that the participants worked for a single organization. Additional research needs to be conducted to determine whether the results of this study will generalize to other organizations.

A second limitation of this study was that all of the information about development was collected at the same time. The cross-sectional, correlational approach makes it impossible to draw firm conclusions about causality. For example, perhaps participating in more development activities causes managers to have more discussions with their boss about development in order to secure needed approval for resources. In this case, encouraging individuals to discuss their

development progress more frequently with their boss will not necessarily increase the number of development activities completed. However, it is encouraging that the results of this study are consistent with previous research using longitudinal designs (i.e., Hazucha et al., 1993).

Future Research

This study suggests several directions for future research. The results of the factor analyses of ratings of boss and organizational support suggest that support for development is complex and multidimensional. One reason the factor analyses resulted in improper solutions may have that there were too few items representing each factor of support (McDonald, 1985). Uncovering the key factors that make up boss and organization support and developing better measures of these constructs will make it possible to investigate which aspects of boss and organizational support have the largest impact on skill development. This would provide more guidance to human resource professionals in advising organizations on the most effective ways to invest their resources and maximize skill development.

We would also benefit from additional insight into how specific development activities relate to the development of specific skills. Clearly, this would make it easier for individuals to choose development activities that will allow them to attain their development objectives.

What skills are easier to change, and which are more difficult? Information on the relative difficulty of improving skills would facilitate setting realistic behavioral objectives.

Additional research about the content and format of feedback following individual assessment also is needed. This study has demonstrated that feedback from individual assessments can play a role in the process of development. The next step is to determine how to maximize the effectiveness of individual assessments as a development tool.

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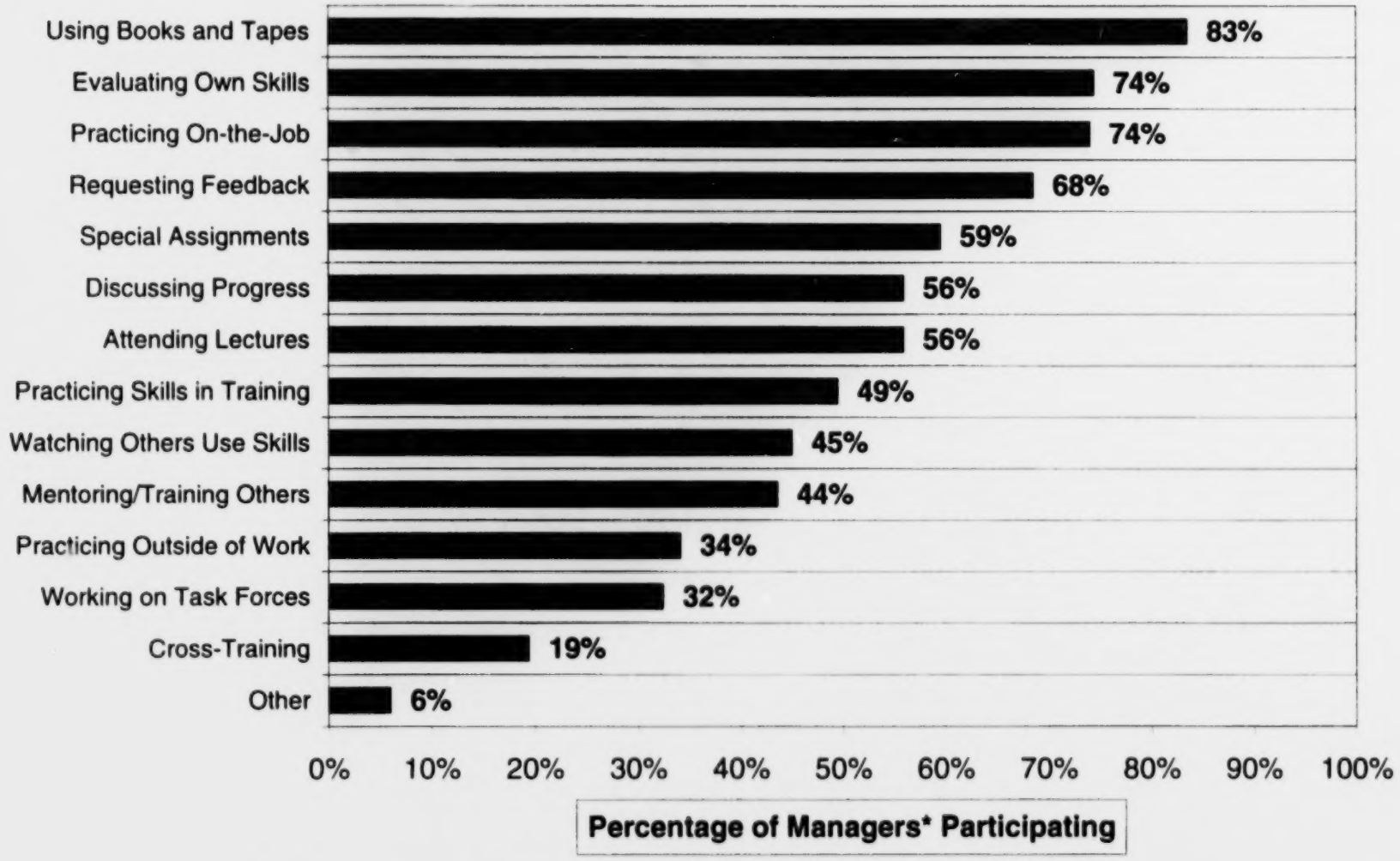
Figure 1.
Development Planning Actions Completed by Managers after Receiving Assessment Results

*Out of 421 managers

Figure 2.
Participation in Development Activities



*Out of 421 managers

Figure 3.
Perceived Impact of Development Activities

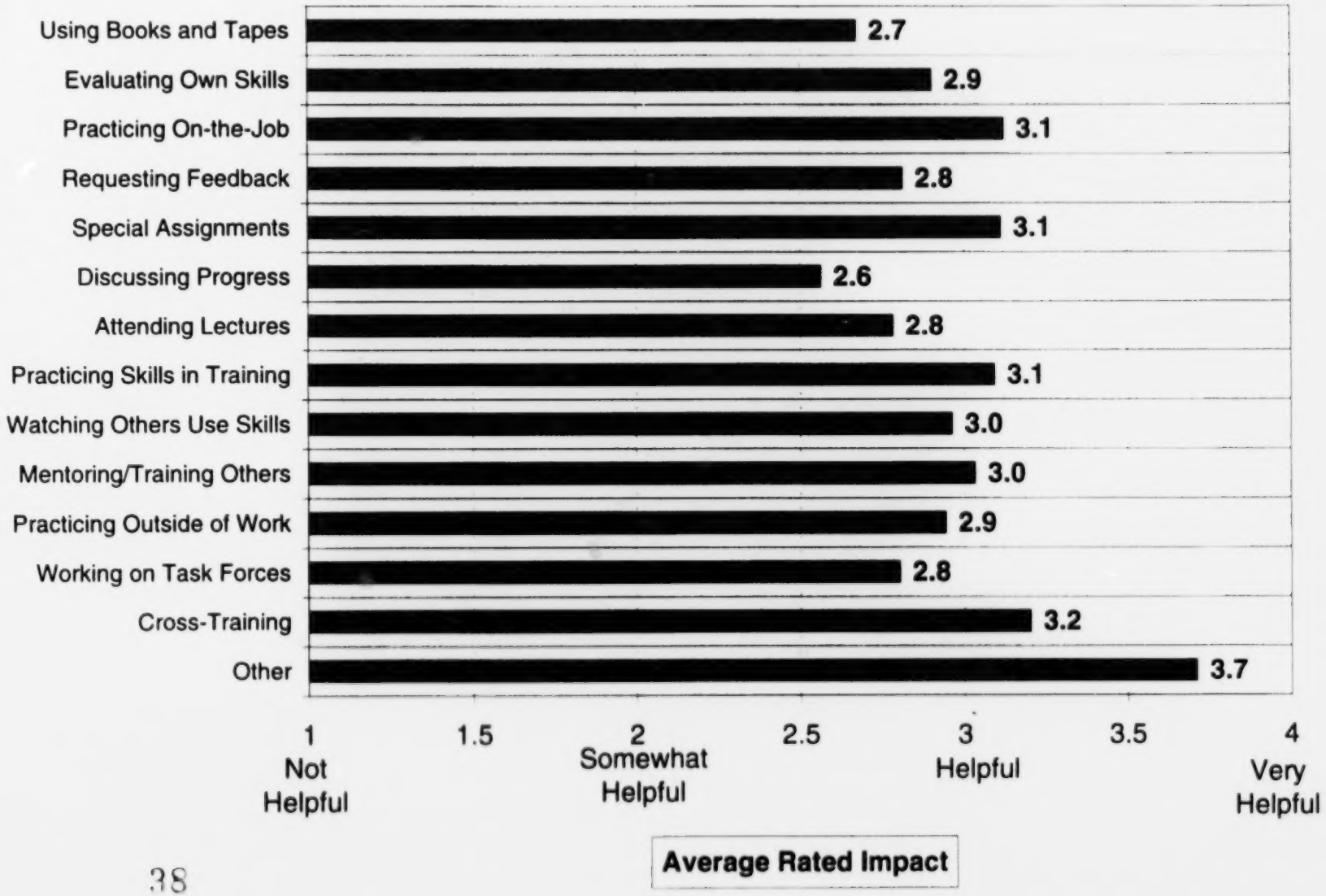
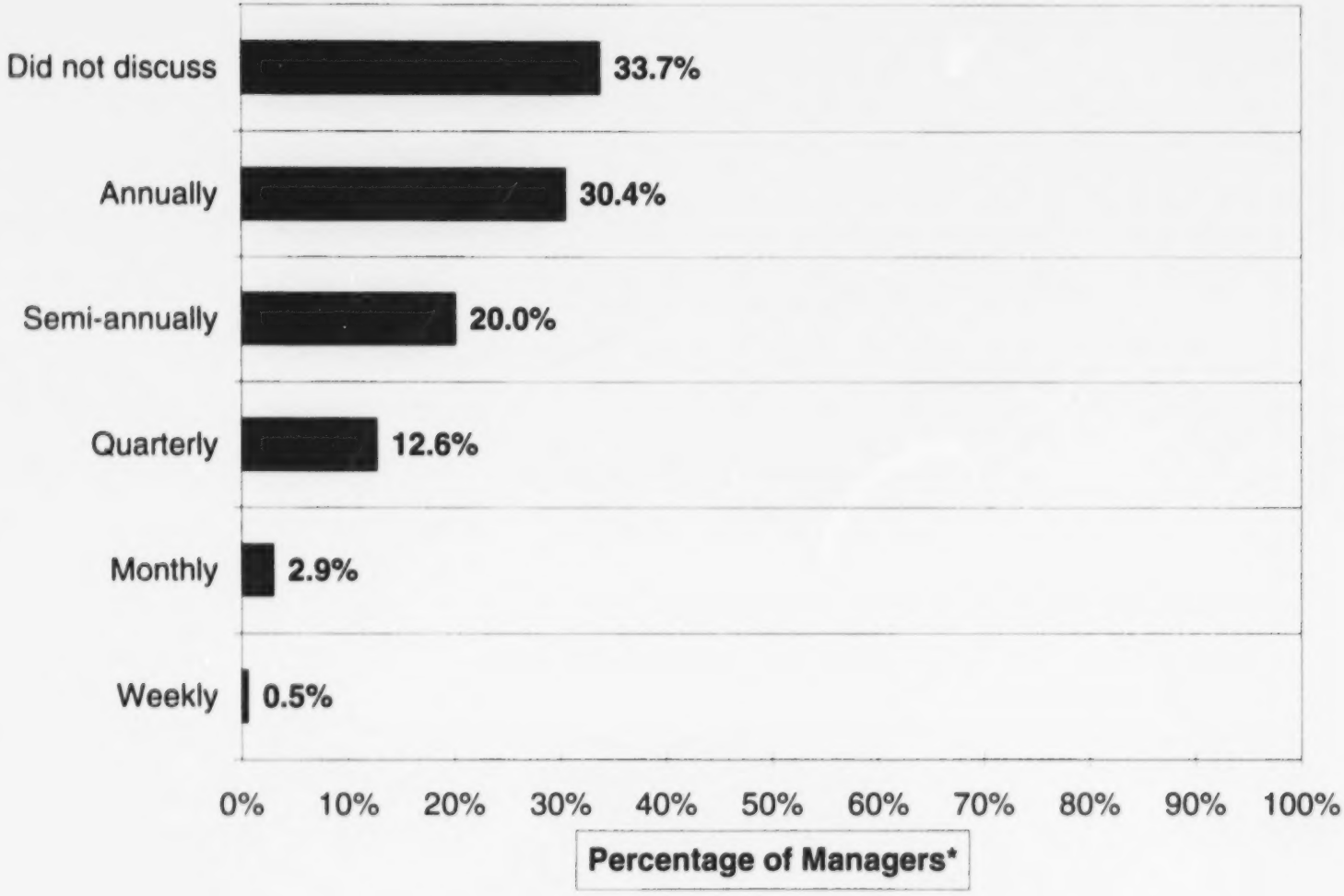
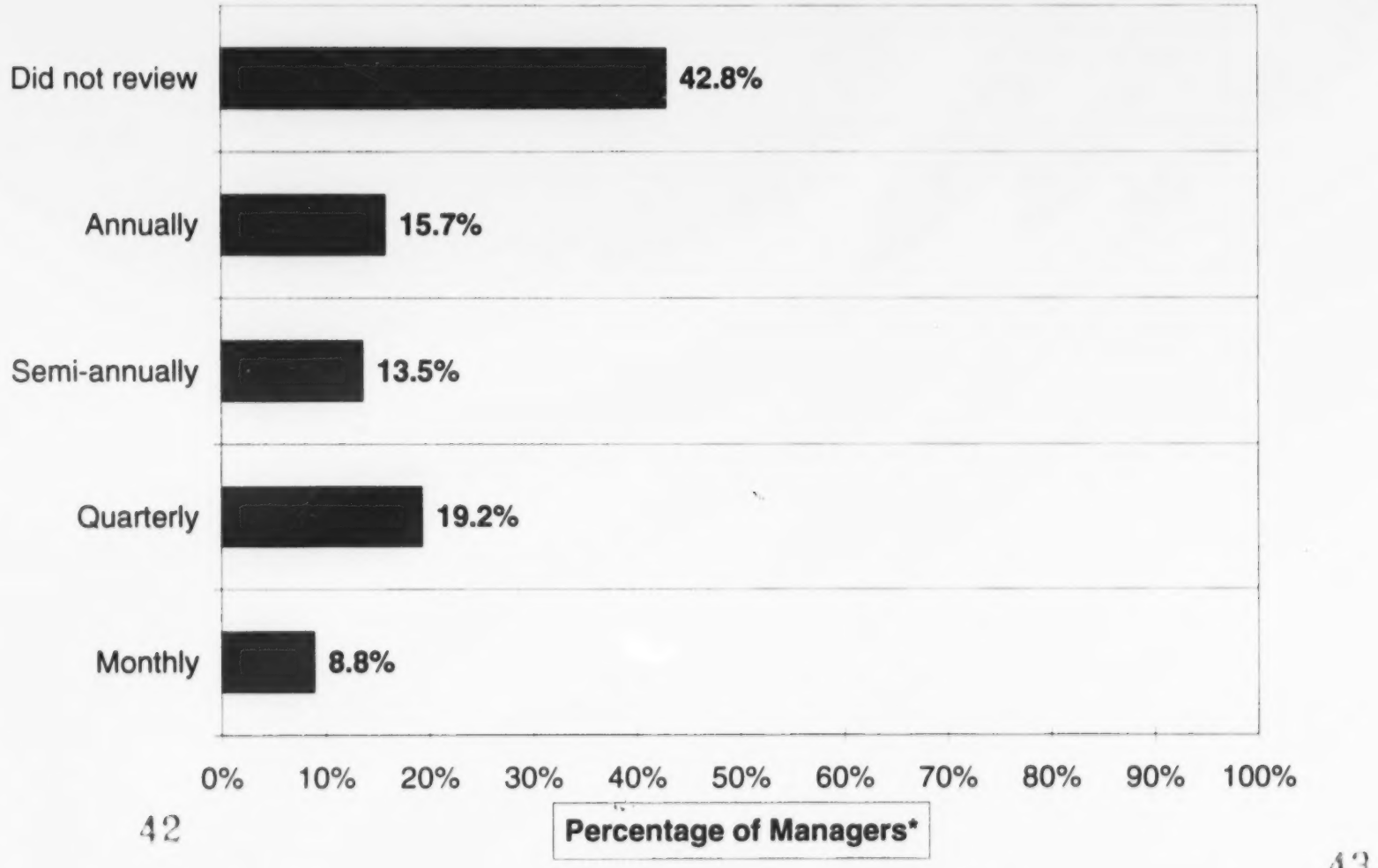


Figure 4.
How often Managers Reviewed their Development Plans



*Out of 421 managers

Figure 5.
How often Managers Discussed Developmental Progress with their Boss



*Out of 421 managers